REMARKS

Applicants request favorable reconsideration and allowance of this application in view of the foregoing amendments and the following remarks.

Claims 1-26 are pending in this application, with Claim 1, 7, 10, 12, 18, and 21 being independent.

No Claims have been cancelled. Claims 1, 3, 6-12, 14, and 17-22 have been amended. Applicant submits that support for the amendments can be found in the original disclosure, for example, at least in the equation $i = f_1(Y)$ used through the specification. Therefore, Applicant submits that no new matter has been added.

The Specification was objected to as missing section headings. Appropriate amendments have been made, and withdrawal of the objection is requested.

Applicant noted a typographical error in blocks 22, 25, and 25' of Figs. 4 and 5. Specifically, "si" should read --if--. Replacement sheets for Figs. 4 and 5 are attached to correct the typographical error.

Claims 6 and 17 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Those claims have been amended in view of the Examiner's comments. Withdrawal of the rejection is requested.

Claims 1, 2, 6, 12, 13, 17, 23, 25 and 26 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Publication No. 2002/0013903 to Le Floch and U.S. Patent No. 5,862,260 to Rhoads. Claims 5 and 16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Publication No. 2002/0013903 to Le Floch, U.S. Patent No.

5,862,260 to Rhoads, and further in view of U.S. Patent No. 7,020,304 to Alattar et al. Applicant respectfully traverses this rejection for the reasons discussed below.

As recited in independent Claim 1, the present invention includes, *inter alia*, the feature of determining a watermarked value of a coefficient of an image, according to a binary value of a symbol of a message and according to an index of the symbol in the message, wherein the index of the symbol is determined from a value of the coefficient of the image. As a result of this feature, each pixel of the image is linked to a specific symbol of the message to be inserted. As this link is based on the unpredictable value, e.g. luminance, of the pixel, any symbol can statistically be attributed to each of the pixel. An advantage of the invention recited in Claim 1 is therefore that the symbols of the message are disorderly distributed within the image. Whatever part of the image is considered for extraction, e.g. after dividing the image, this disorder statistically ensures that all the symbols are inserted in the considered part of the image. This disorder of the symbols implies robustness of the method.

Applicant submits that the cited art fails to disclose or suggest at least the above-mentioned feature of the invention recited in Claim 1, and therefore fails to achieve the above-mentioned advantages. Le Floch (US-2002/0013903, hereafter referred to as Le Floch) concerns a method for inserting a message in an image (watermarking) first comprising a preliminary segmentation of the image depending the length of the message to be inserted and an association between the segmented regions and the symbols of the message. A specific pseudo-random sequence is generated for each segmented region and is modulated with the associated symbol. The resulting sequence is added to a reversible transform, e.g. OCT or wavelet transform, of the segmented region. Consequently, the symbols are associated to regions of the image regardless

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the pixel values of the associated regions. A drawback of this solution is that, in case of dividing part of the image, a segmented region can be lost and the associated symbol cannot be retrieved during the extraction. Therefore, this solution is not robust.

In sharp contrast, the invention of Claim 1 specifies that each coefficient (pixel) of the image is considered independently and then the index of the symbol to be inserted is determined directly from the coefficient (pixel) value. The invention of Claim 1 performs a coefficient/symbol association while Le Floch offers a region/symbol association.

Accordingly, Applicant submits that Le Floch fails to disclose or suggest the invention of Claim 1. Rhoads (US 5,862,260) and Allatar et al. (US 7,020,304) concern watermarking and fingerprinting methods. However, none of these two references recites the determination/calculation of the index of a message symbol according to the value of the image coefficients. Therefore, Rhoads and Allatar et al. fail to fill the gaps of Le Floch in meeting the features of Claim 1.

As recited in independent Claim 7, the present invention is directed to a method of extracting a message that includes the feature of, for each coefficient of the image, calculating a symbol index and a binary value, both according to a value of the coefficient. Applicant submits that the cited art fails to disclose or suggest at least this feature.

Regarding, the extraction of the message from the image, Le Floch's method comprises a first step of determining the length of the message from a similar segmentation of the image and then comprises the determination of the symbols of the message. With a partial loss of the image, e.g. by dividing the image, the segmentation would not match with the initial segmentation for insertion. Thus, Applicant submits that LeFloch's method is not robust.

If an efficient *a priori* segmentation can be made, the extraction of the symbol of index i then requires the browsing of the segmented regions associated with the index i. The method computes a correlation and a potential value of the symbol. Here again, the choice of the index i is arbitrary between 1 and the determined length of the message. If the determined length is wrong, e.g. because the image has been divided before the extraction process. The extracted message will be erroneous. Le Floch then fails to disclose the determination of the index i from the value of the (watermarked) value of the image coefficient.

In contrast, the invention of Claim 7 recites the calculation of a symbol index according to a value of the (image) coefficient. As the coefficient value directly determines the index, the invention of Claim 7 avoids steps of preliminary segmentation and especially of determination of the message length.

Consequently, Le Floch does not anticipate the subject matter of extraction Claim 7. The other cited art also fails to disclose the above-mentioned features of Claim 7, and therefore fails to remedy the deficiencies of Le Floch.
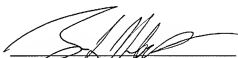
The other independent claims include features similar to those of either Claim 1 or Claim 7 discussed above, and those other claims are believed patentable for reasons similar to Claims 1 and 7.

The dependent claims are patentable for at least the same reasons as the independent claims, as well as for the additional features they recite.

For the foregoing reasons, this application is believed to be in condition for allowance. An early Notice of Allowance is requested.

Applicant's undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,

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